Allied Telesyn International

CentreCOM ®

AT-3012SL
AT-3016SL
AT-3024SL

Multiport Repeaters

Installation Guide

PN 613-10627-00 Rev A

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Electrical Safety and Installation Requirements

STANDARDS: This product meets the following standards

U.S. Federal Communications Commission
RADIATED ENERGY Note: This equipment has been tested and found to comply with the limits for a Class A digital device pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with this instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense. Note: Modifications or changes not expressly approved by the manufacturer or the FCC can void your right to operate this equipment.

Canadian Department of Communications
This Class A digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations. Cet appareil numérique de la classe A respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

RFI Emission EN55022 Class A

WARNING: In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

Immunity EN50082-1

Electrical Safety EN60950, UL1950, CSA 950

SAFETY
ELECTRICAL NOTICES
WARNING: ELECTRIC SHOCK HAZARD
To prevent ELECTRIC shock, do not remove cover. No user-serviceable parts inside. This unit contains HAZARDOUS VOLTAGES and should only be opened by a trained and qualified technician. To avoid the possibility of ELECTRIC SHOCK, disconnect electric power to the product before connecting or disconnecting the LAN cables.

LIGHTNING DANGER
DANGER: DO NOT WORK on equipment or CABLES during periods of LIGHTNING ACTIVITY.

CAUTION: POWER CORD IS USED AS A DISCONNECTION DEVICE. TO DE-ENERGISE EQUIPMENT, disconnect the power cord.

INSTALLATION
ELECTRICAL—AUTO VOLTAGE ADJUSTMENT
This product will automatically adjust to any voltage between the ranges shown on the label.

ELECTRICAL—TYPE CLASS 1 EQUIPMENT
THIS EQUIPMENT MUST BE EARTHED. Power plug must be connected to a properly wired earth ground socket outlet. An improperly wired socket outlet could place hazardous voltages on accessible metal parts.

ELECTRICAL—CORD NOTICE
Use power cord, maximum 4.5 meters long, rated 6 amp minimum, 250V, made of HAR cordage molded IEC 320 connector on one end and on the other end a plug approved by the country of end use.

CAUTION: **Air vents** must **not be blocked** and must have free access to the room ambient air for cooling.

OPERATING TEMPERATURE
This product is designed for a maximum ambient temperature of 50° C.

ALL COUNTRIES: Install product in accordance with local and National Electrical Codes.

NORMEN: Dieses Produkt erfüllt die Anforderungen der nachfolgenden Normen.

Hochfrequenzstörung EN55022 Klasse A

WARNUNG: Bei Verwendung zu Hause kann dieses Produkt Funkstörungen hervorrufen. In diesem Fall müßte der Anwender angemessene Gegenmaßnahmen ergreifen.

Störsicherheit EN50082-1

Elektrische Sicherheit EN60950, UL1950, CSA 950

SICHERHEIT
ACHTUNG: GEFÄHRLICHE SPANNUNG
Das Gehäuse nicht öffnen. Das Gerät enthält keine vom Benutzer wartbaren Teile. Das Gerät steht unter Hochspannung und darf nur von qualifiziertem technischem Personal geöffnet werden. Vor Anschluß der LAN-Kabel, Gerät vom Netz trennen.

GEFAHR DURCH BLITZSCHLAG
GEFAHR: Keine Arbeiten am Gerät oder an den Kabeln während eines Gewitters ausführen.

VORSICHT: DAS NETZKABEL DIENT ZUM TRENNEN DER STROMVERSORGUNG. ZUR TRENNUNG VOM NETZ, KABEL AUS DER STECKDOSE ZIEHEN.

INSTALLATION
AUTOMATISCHE SPANNUNGSEINSTELLUNG
Dieses Gerät stellt sich automatisch auf die auf dem Etikett aufgeführten Spannungswerte ein.

GERÄTE DER KLASSE 1
DIESE GERÄTE MÜSSEN GEERDET SEIN. Der Netzstecker darf nur mit einer vorschriftsmäßig geerdeten Steckdose verbunden werden. Ein unvorschriftsmäßiger Anschluß kann die Metallteile des Gehäuses unter gefährliche elektrische Spannungen setzen.

NETZKABEL
Das Netzkabel sollte eine maximale Länge von 4,5 Metern, einen Nennwert von mindestens 6 A und 250 V haben, aus HAR-Material hergestellt und mit einer gepreßten, IEC 320 entsprechenden, Anschlußverbindung an einem Ende, und am anderen Ende mit einem im Land des Endverbrauchers geprüften Stecker ausgestattet sein.

VORSICHT: Die Entlüftungsöffnungen dürfen nicht versperrt sein und müssen zum Kühlen freien Zugang zur Raumluft haben.

BETRIEBSTEMPERATUR
Dieses Produkt wurde für den Betrieb in einer Umgebungstemperatur von nicht mehr als 50˚ C entworfen.

ALLE LÄNDER: Installation muß örtlichen und nationalen elektrischen Vorschriften entsprechen.

STANDARDER: Dette produkt tilfredsstiller de følgende standarder.

Radiofrekvens forstyrrelsesemission EN55022 Klasse A

ADVARSEL: I et hjemligt miljø kunne dette produkt forårsage radio forstyrrelse. Bliver det tilfældet, påkræves brugeren muligvis at tage tilstrækkelige foranstaltninger.

Immunitet EN50082-1

Elektrisk sikkerhed. EN60950, UL1950, CSA 950.

SIKKERHED
ELEKTRISKE FORHOLDSREGLER
ADVARSEL: RISIKO FOR ELEKTRISK STØD
For at forebygge ELEKTRISK stød, undlad at åbne apparatet. Der er ingen indre dele, der kan repareres af brugeren. Denne enhed indeholder LIVSFARLIGE STRØMSPÆNDINGER og bør kun åbnes af en uddannet og kvalificeret tekniker. For at undgå risiko for ELEKTRISK STØD, afbrydes den elektriske strøm til produktet, før LAN-kablerne monteres eller afmonteres.

FARE UNDER UVEJR
FARE: UNDLAD at arbejde på udstyr eller KABLER i perioder med LYNAKTIVITET.

ADVARSEL: DEN STRØMFØRENDE LEDNING BRUGES TIL AT AFBRYDE STRØMMEN. SKAL STRØMMEN TIL APPARATET AFBRYDES, tages ledningen ud af stikket.

INSTALLATION
ELEKTRISK—AUTOMATISK SPÆNDINGSREGULERING
Dette apparat vil automatisk tilpasse sig enhver spænding indenfor de værdier, der er angivet på etiketten.

ELEKTRISK—KLASSE 1-UDSTYR
DETTE UDSTYR KRÆVER JORDFORBINDELSE. Stikket skal være forbundet med en korrekt installeret jordforbunden stikkontakt. En ukorrekt installeret stikkontakt kan sætte livsfarlig spænding til tilgængelige metaldele.

ELEKTRISK—LEDNING
Anvend ledning af maksimum 4,5 meters længde, med en kapacitet på minimum 6 amp., 250 v, bestående af en IEC 320 connector med indstøbt HAR ledning i den ene ende og et stik i den anden ende godkendt der er af myndighederne i brugerlandet.

ADVARSEL: Ventilationsåbninger må ikke blokeres og skal have fri adgang til den omgivende luft i rummet for afkøling.

BETJENINGSTEMPERATUR
Dette apparat er konstrueret til en omgivende temperatur på maksimum 50 grader C.

ALLE LANDE: Installation af produktet skal ske i overensstemmelse med lokal og national lovgivning for elektriske installationer.

EISEN: Dit product voldoet aan de volgende eisen.

RFI Emissie EN55022 Klasse A

WAARSCHUWING: Binnenshuis kan dit product radiostoring veroorzaken, in welk geval de gebruiker verplicht kan worden om gepaste maatregelen te nemen.

Immuniteit EN50082-1

Electrische Veiligheid EN60950, UL1950, CSA 950

VEILIGHEID
WAARSCHUWINGEN MET BETREKKING TOT ELEKTRICITEIT
WAARSCHUWING: GEVAAR VOOR ELEKTRISCHE SCHOKKEN
Gelieve het deksel niet te verwijderen, teneinde ELEKTRISCHE schokken te voorkomen. Binnenin bevinden zich geen onderdelen die door de gebruiker kunnen worden onderhouden. Dit toestel staat onder GEVAARLIJKE SPANNING en mag alleen worden geopend door een daartoe opgeleide en bevoegde technicus. Om het gevaar op ELEKTRISCHE SCHOKKEN te vermijden, moet u het toestel van de stroombron ontkoppelen alvorens de LAN-kabels te koppelen of ontkoppelen.

GEVAAR VOOR BLIKSEMINSLAG
GEVAAR: NIET aan toestellen of KABELS WERKEN bij BLIKSEM.

WAARSCHUWING: HET TOESTEL WORDT UITGESCHAKELD DOOR DE STROOMKABEL TE ONTKOPPELEN. OM HET TOESTEL STROOMLOOS TE MAKEN: de stroomkabel ontkoppelen.

INSTALLATIE
ELEKTRISCH—AUTOMATISCHE AANPASSING VAN DE SPANNING
Dit toestel past zich automatisch aan elke spanning aan, tussen de waarden op het label vermeld.

ELEKTRISCHE—TOESTELLEN VAN KLASSE 1
DIT TOESTEL MOET GEAARD WORDEN. De stekker moet aangesloten zijn op een juist geaarde contactdoos. Een onjuist geaarde contactdoos kan de metalen onderdelen waarmee de gebruiker eventueel in aanraking komt onder gevaarlijke spanning stellen.

ELEKTRISCHE—SNOEREN
Gebruik een elektrisch snoer, maximum 4,5 meter lang, berekend voor ten minste 6 ampère, 250 V, uit HAR vervaardigd, met aan het ene uiteinde een gevormde IEC 320 stekker en aan het andere uiteinde een stekker die goedgekeurd is door het land waar het toestel zal worden gebruikt.

WAARSCHUWING: De ventilatiegaten mogen niet worden gesperd en moeten de omgevingslucht ongehinderd toelaten voor afkoeling.

BEDRIJFSTEMPERATUUR
De omgevingstemperatuur voor dit produkt mag niet meer bedragen dan 50 graden Celsius.

ALLE LANDEN: het toestel installeren overeenkomstig de lokale en nationale elektrische voorschriften.

NORMES: ce produit est conforme aux normes de suivantes :

Emission d'interférences radioélectriques EN55022 Classe A

MISE EN GARDE: dans un environnement domestique, ce produit peut provoquer des interférences radioélectriques. Auquel cas, l'utilisateur devra prendre les mesures adéquates.

Immunité EN50082 - 1

Sécurité électrique EN60950, UL1950, CSA 950

SECURITE
INFORMATION SUR L'ELECTRICITE
AVERTISSEMENT: DANGER D'ELECTROCUTION
Pour empêcher les dangers d'ELECTROCUTION, ne pas enlever le couvercle. L'équipement ne contient aucun élément réparable par l'utilisateur. Cet appareil comprend des TENSIONS DANGEREUSES et ne doit être ouvert que par un technicien dûment qualifié. Pour éviter tout risque d'ELECTROCUTION, débrancher l'appareil de la prise de courant avant de connecter ou de déconnecter les câbles LAN.

DANGER DE FOUDRE
DANGER: NE PAS MANIER l'équipement ou les CABLES pendant les périodes d'activité orageuse.

ATTENTION: LE CORDON D'ALIMENTATION SERT DE MISE HORS CIRCUIT POUR COUPER L'ALIMENTATION DE L'APPAREIL, débranchez le cordon.

INSTALLATION
ELECTRICITE—REGLAGE DE TENSION AUTOMATIQUE
Ce produit peut s'ajuster automatiquement sur n'importe quelle tension comprise dans la plage indiquée sur le label.

ELECTRICITE—EQUIPEMENT DE CLASSE 1
CET APPAREIL DOIT ETRE MIS A LA TERRE. La prise de courant doit être branchée dans une prise femelle correctement mise à la terre. Sinon, des tensions dangereuses risqueraient d'atteindre les pièces métalliques accessibles à l'utilisateur.

ELECTRICITE—INFORMATION SUR LE CORDON
Utiliser un cordon secteur de 4,5 mètres de long maximum, calibré à 6 ampères minimum, 250V, et fabriqué en câblage HAR avec connecteur IEC 320 moulé à une extrémité et à l'autre extrémité, une prise de courant mâle répondant aux normes du pays d'utilisation.

ATTENTION: Ne pas bloquer les fentes d'aération, ce qui empêcherait l'air ambiant de circuler librement pour le refroidissement.

TEMPERATURE DE FONCTIONNEMENT
Ce produit est capable de tolérer une température ambiante maximum de 50 degrés Celsius

POUR TOUS PAYS: Installer le produit conformément aux normes électriques nationales et locales.

STANDARDIT: Tämä tuote on seuraavien standardien mukainen.

Radioaaltojen häirintä EN55022 Luokka A

VAROITUS: Kotiolosuhteissa tämä laite voi aiheuttaa radioaaltojen häiröitä, missä tapauksessa laitteen käyttäjän on mahdollisesti ryhdyttävä tarpeellisiin toimenpiteisiin.

Kestävyys EN50082-1

Sähköturvallisuus EN60950, UL1950, CSA 950

TURVALLISUUS
SÄHKÖÖN LIITTYVIÄ HUOMAUTUKSIA
VAROITUS: SÄHKÖISKUVAARA
Estääksesi SÄHKÖISKUN älä poista kantta. Sisällä ei ole käyttäjän huollettavissa olevia osia. Tämä laite sisältää VAARALLISIA JÄNNITTEITÄ ja sen voi avata vain koulutettu ja pätevä teknikko. Välttääksesi SÄHKÖISKUN mahdollisuuden katkaise sähkövirta tuotteeseen ennen kuin liität tai irrotat paikallisverkon (LAN) kaapelit.

SALAMANISKUVAARA
HENGENVAARA: ÄLÄ TYÖSKENTELE laitteiden tai KAAPELEIDEN KANSSA SALAMOINNIN AIKANA.

HUOMAUTUS: VIRTAJOHTOA KÄYTETÄÄN VIRRANKATKAISULAITTEENA. VIRTA KATKAISTAAN irrottamalla virtajohto.

ASENNUS
SÄHKÖ—AUTOMAATTINEN JÄNNITTEENSÄÄTÖ
Tämä tuote säätää automaattisesti mihin tahansa jännitteeseen ohjetarrassa annettujen arvojen välillä.

SÄHKÖ—TYYPPILUOKAN 1 LAITTEET
TÄMÄ LAITE TÄYTYY MAADOITTAA. Pistoke täytyy liittää kunnollisesti maadoitettuun pistorasiaan. Virheellisesti johdotettu pistorasia voi altistaa metalliosat vaarallisille jännitteille.

SÄHKÖ—JOHTOON LIITTYVÄ HUOMAUTUS
Käytä seuraavanlaista virtajohtoa: maksimipituus 4,5 metriä, minimiteho 6 ampeeria, 250 V, valmistettu HAR-johdostosta, muovattu IEC 320 -liitin toisessa päässä ja käyttömaassa hyväksytty pistoke toisessa päässä.

HUOMAUTUS: Ilmavaihtoreikiä ei pidä tukkia ja niillä täytyy olla vapaa yhteys ympäröivään huoneilmaan, jotta ilmanvaihto tapahtuisi.

KÄYTTÖLÄMPÖTILA
Tämä tuote on suunniteltu ympäröivän ilman maksimilämpötilalle 50° C.

KAIKKI MAAT: Asenna tuote paikallisten ja kansallisten sähköturvallisuusmääräysten mukaisesti.

STANDARD: Questo prodotto è conforme ai seguenti standard.

Emissione RFI (interferenza di radiofrequenza) EN55022 Classe A

AVVERTENZA: in ambiente domestico questo prodotto potrebbe causare radio interferenza. In questo caso potrebbe richiedersi all'utente di prendere gli adeguati provvedimenti.

Immunità EN50082-1

Sicurezza elettrica EN60950, UL1950, CSA 950

NORME DI SICUREZZA
AVVERTENZE ELETTRICHE
ATTENZIONE: PERICOLO DI SCOSSE ELETTRICHE
Per evitare SCOSSE ELETTRICHE non asportare il coperchio. Le componenti interne non sono riparabili dall'utente. Questa unità ha TENSIONI PERICOLOSE e va aperta solamente da un tecnico specializzato e qualificato. Per evitare ogni possibilità di SCOSSE ELETTRICHE, interrompere l'alimentazione del dispositivo prima di collegare o staccare i cavi LAN.

PERICOLO DI FULMINI
PERICOLO: NON LAVORARE sul dispositivo o sui CAVI durante PRECIPITAZIONI TEMPORALESCHE.

ATTENZIONE: IL CAVO DI ALIMENTAZIONE È USATO COME DISPOSITIVO DI DISATTIVAZIONE.
PER TOGLIERE LA CORRENTE AL DISPOSITIVO staccare il cavo di alimentazione.

INSTALLAZIONE
ELETTRICITÀ—REGOLAZIONE AUTOMATICA DELLA TENSIONE
Questo prodotto regolerà automaticamente la tensione ad un valore compreso nella gamma indicata sull'etichetta.

ELETTRICITÀ—DISPOSITIVI DI CLASSE 1
QUESTO DISPOSITIVO DEVE AVERE LA MESSA A TERRA. La spina deve essere inserita in una presa di corrente specificamente dotata di messa a terra. Una presa non cablata in maniera corretta rischia di scaricare una tensione pericolosa su parti metalliche accessibili.

ELETTRICITÀ—AVVERTENZA SUL CAVO
Usare un cavo della lunghezza massima di metri 4,5, con capacità minima di 6 A, 250 V, di filo HAR, dotato di connettore stampato IEC 320 ad un'estremità e di spina approvata dal paese di destinazione all'altra.

ATTENZIONE: le prese d'aria non vanno ostruite e devono consentire il libero ricircolo dell'aria ambiente per il raffreddamento.

TEMPERATURA DI FUNZIONAMENTO
Questo prodotto è concepito per una temperatura ambientale massima di 50 gradi centigradi.

TUTTI I PAESI: installare il prodotto in conformità alle vigenti normative elettriche nazionali.

SIKKERHETSNORMER: Dette produktet tilfredsstiller følgende sikkerhetsnormer.

RFI stråling EN55022 Klasse A

ADVARSEL: Hvis dette produktet benyttes til privat bruk, kan produktet forårsake radioforstyrrelse. Hvis dette skjer, må brukeren ta de nødvendige forholdsregler.

Immunitet EN50082-1

Elektrisk sikkerhet EN60950, UL1950, CSA 950

SIKKERHET
ELEKTRISKE MEDDELELSE
ADVARSEL: FARE FOR ELEKTRISK SJOKK
For å unngå ELEKTRISK sjokk, må dekslet ikke tas av. Det finnes ingen deler som du kan bruke på innsiden. Denne enheten inneholder FARLIGE SPENNING, og må kun åpnes av en opplært, kvalifisert tekniker. For å unngå muligheten av ELEKTRISK SJOKK, må den elektriske strømmen til produktet være av når du slår LAN-ledninger av og på.

FARE FOR LYNANTENNELSE
FARE: MÅ IKKE BRUKES på utstyr eller ledninger mens LYN-AKTIVITET er i gang.

FORSIKTIG: STRØMLEDNINGEN BRUKES TIL Å SLÅ APPARATET AV. HVIS DU VIL DEAKTIVISERE UTSTYRET, må du fjerne strømledningen.

INSTALLASJON
ELEKTRISK—AUTO SPENNINGSTILPASSING
Dette produktet vil automatisk bli tilpasset hvilken som helst strøminnstilling i de områdene som vises på etiketten.

ELEKTRISKE—TYPE 1. KLASSE UTSTYR
DETTE UTSTYRET MÅ JORDES. Strømkontakten må være tilkoplet en korrekt jordet grunnstøpselkontakt. En støpselkontakt som ikke er jordet på rett måte, kan tilføre farlig spenning til lett tilgjengelige metalldeler.

ELEKTRISKE—MEDDELELSE OM LEDNINGER
Bruk en strømledning av maksimal størrelse 4,5 m i lengde, vurdert for minst av 6 amp, 250V, fremstilt av HAR ledning IEC 320 koplingsstykke på den ene kanten og på den andre kanten en plugg som har blitt godkjent i det landet hvor den siste brukeren befinner seg.

FORSIKTIG: Luftventilene må ikke blokkeres og må ha fri tilgang til luft med romtemperatur for avkjøling.

DRIFTSTEMPERATUR
Dette produktet har blitt fremstilt til bruk med maksimum romtemperatur på 50 grader celsius.

ALLE LAND: Produktet må installeres i samsvar med de lokale og nasjonale elektriske koder.

PADRÕES: Este produto atende aos seguintes padrões.

Emissão de interferência de radiofrequência EN55022 Classe A

AVISO: Num ambiente doméstico este produto pode causar interferência na radiorrecepção e, neste caso, pode ser necessário que o utente tome as medidas adequadas.

Imunidade EN50082-1

Segurança Eléctrical EN60950, UL1950, CSA 950

SEGURANÇA
AVISOS SOBRE CARACTERÍSTICAS ELÉTRICAS
ATENÇÃO: PERIGO DE CHOQUE ELÉTRICO
Para evitar CHOQUE ELÉTRICO, não retire a tampa. Não contém peças que possam ser consertadas pelo usuário. Este aparelho contém VOLTAGENS PERIGOSAS e só deve ser aberto por um técnico qualificado e treinado. Para evitar a possibilidade de CHOQUE ELÉTRICO, desconecte o aparelho da fonte de energia elétrica antes de conectar e desconectar os cabos da LAN.

PERIGO DE CHOQUE CAUSADO POR RAIO
PERIGO: NÃO TRABALHE no equipamento ou nos CABOS durante períodos suscetíveis de QUEDAS DE RAIO.

CUIDADO: O CABO DE ALIMENTAÇÃO É UTILIZADO COMO UM DISPOSITIVO DE DESCONEXÃO.
PARA DESELETRIFICAR O EQUIPAMENTO desconecte o cabo de alimentação.

INSTALAÇÃO
ELÉTRICO—AJUSTE AUTOMÁTICO DE VOLTAGEM
Este produto ajustar-se-á automaticamente a qualquer voltagem que esteja dentro dos limites indicados no rótulo.

ELÉTRICO—EQUIPAMENTOS DO TIPO CLASSE 1
DEVE SER FEITA LIGAÇÃO DE FIO TERRA PARA ESTE EQUIPAMENTO. O plugue deve ser conectado a uma tomada com ligação de fio terra. Tomadas sem ligação de fio terra podem transmitir voltagens perigosas a peças metálicas expostas.

ELÉTRICO—AVISO SOBRE O CABO DE ALIMENTAÇÃO
Use cabo de alimentação com comprimento máximo de 4, 5 metros, com uma capacidade mínima de 6 amp e 250 V, fabricado de material para cabo HAR com conector moldado IEC 320 em uma extremidade e, na outra extremidade, um plugue aprovado para uso no país em questão.

CUIDADO: As entradas de ar não devem ser bloqueadas e devem ter acesso livre ao ar ambiente para arrefecimento adequado do aparelho.

TEMPERATURA DE FUNCIONAMENTO
Este produto foi projetado para uma temperatura ambiente máxima de 50 graus centígrados.

TODOS OS PAÍSES: Instale o produto de acordo com as normas federais e locais para instalações elétricas.

ESTÁNDARES: Este producto cumple con los siguientes estándares.

Emisión RFI EN55022 Clase A

ADVERTENCIA: en un entorno doméstico, este producto puede causar radiointerferencias, en cuyo caso, puede requerirse del usuario que tome las medidas que sean convenientes al respecto.

Inmunidad EN50082-1

Seguridad eléctrica EN60950, UL1950, CSA 950

ENERGIA RADIADA
Este producto comercial ha sido probado y cumple con las normas requeridas en los EE. UU. para un dispositivo de **Clase A**.

SEGURIDAD
AVISOS ELECTRICOS
ADVERTENCIA: PELIGRO DE ELECTROCHOQUE
Para evitar un ELECTROCHOQUE, no quite la tapa. No hay ningún componente en el interior al cual puede prestar servicio el usuario. Esta unidad contiene VOLTAJES PELIGROSOS y sólo deberá abrirla un técnico entrenado y calificado. Para evitar la posibilidad de ELECTROCHOQUE desconecte la corriente eléctrica que llega al producto antes de conectar o desconectar los cables LAN.

PELIGRO DE RAYOS
PELIGRO: NO REALICE NINGUN TIPO DE TRABAJO O CONEXION en los equipos o en LOS CABLES durante TORMENTAS DE RAYOS.

ATENCION: EL CABLE DE ALIMENTACION SE USA COMO UN DISPOSITIVO DE DESCONEXION. PARA DESACTIVAR EL EQUIPO, desconecte el cable de alimentación.

INSTALACION
ELECTRICO—AUTO-AJUSTE DE TENSION
Este producto se ajustará automáticamente a cualquier tensión entre los valores máximos y mínimos indicados en la etiqueta.

ELECTRICO—EQUIPO DEL TIPO CLASE 1
ESTE EQUIPO TIENE QUE TENER CONEXION A TIERRA. El cable tiene que conectarse a un enchufe con tierra debidamente instalado. Un enchufe que no está correctamente instalado podría ocasionar tensiones peligrosas en las partes metálicas están expuestas.

ELECTRICO—ADVERTENCIA SOBRE EL CABLE
Use un cable eléctrico con un máximo de 4, 5 metros de largo, con una capacidad mínima de 6 amperios, 250 V, hecho de cable HAR, con el conector moldeado IEC 320 en un extremo y con un enchufe que está aprobado por el país de uso final en el otro.

INSTRUCCIONES DE MONTAJE
ATENCION: Estos modelos están diseñados para operar en posición HORIZONTAL. NO SE DEBEN MONTAR VERTICALMENTE sin el uso de un chasis de montaje vertical de Allied Telesyn que se ha diseñado para este fin.

ATENCION: Las aberturas para ventilación no deberán bloquearse y deberán tener acceso libre al aire ambiental de la sala para su enfriamiento.

TEMPERATURA REQUERIDA PARA LA OPERACIÓN
Este producto está diseñado para una temperatura ambiental máxima de 50 grados C.

PARA TODOS LOS PAÍSES: Monte el producto de acuerdo con los Códigos Eléctricos locales y nacionales.

STANDARDER: Denna produkt uppfyller följande standarder.

Radiostörning EN55022 Klass A

VARNING: Denna produkt kan ge upphov till radiostörningar i hemmet, vilket kan tvinga användaren till att vidtaga erforderliga åtgärder.

Immunitet EN50082-1

Elsäkerhet EN60950, UL1950, CSA 950

SÄKERHET
TILLKÄNNAGIVANDEN BETRÄFFANDE ELEKTRICITETSRISK:
RISK FÖR ELEKTRISK STÖT
För att undvika ELEKTRISK stöt, ta ej av locket. Det finns inga delar inuti som behöver underhållas. Denna apparat är under HÖGSPÄNNING och får endast öppnas av en utbildad kvalificerad tekniker. För att undvika ELEKTRISK STÖT, koppla ifrån produktens strömanslutning innan LAN-kablarna ansluts eller kopplas ur.

FARA FÖR BLIXTNEDSLAG
FARA: ARBETA EJ på utrustningen eller kablarna vid ÅSKVÄDER.

VARNING: NÄTKABELN ANVÄNDS SOM STRÖMBRYTARE FÖR ATT KOPPLA FRÅN STRÖMMEN, dra ur nätkabeln.

INSTALLATION
ELEKTRISKT—AUTOMATISK SPÄNNINGSJUSTERING
Denna produkt justeras automatiskt till alla spänningar inom omfånget som indikeras på produktens märkning.

ELEKTRISKT—TYP KLASS 1 UTRUSTNING
DENNA UTRUSTNING MÅSTE VARA JORDAD. Nätkabeln måste vara ansluten till ett ordentligt jordat uttag. Ett felaktigt uttag kan göra att närliggande metalldelar utsätts för högspänning. Apparaten skall anslutas till jordat uttag, när den ansluts till ett nätverk.

ELEKTRISKT—ANMÄRKNING BETRÄFFANDE KABELN
Använd en kabel med maximum längd 4,5 meter och minimum 6 amp nominal, 250V, av HAR kabelfabrikat med ett specialutformat IEC 320-kontaktdon i ena änden och i den andra en plugg som godkänts i landet där produkten används.

VARNING: Luftventilerna får ej blockeras och måste ha fri tillgång till omgivande rumsluft för avsvalning.

DRIFTSTEMPERATUR
Denna produkt är konstruerad för rumstemperatur ej överstigande 50 grader Celsius.

ALLA LÄNDER: Installera produkten i enlighet med lokala och statliga bestämmelser för elektrisk utrustning.

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Chapter 1
Description

CentreCOM AT-3012SL, AT-3016SL, and AT-3024 SL Multiport Repeaters provide low-cost connection for up to 24 IEEE 802.3 10Base-T network segments. The series includes three different models, featuring 12, 16 and 24 shielded RJ-45 port connections for 10Base-T networks.

In addition to the twisted pair interfaces, each unit includes a choice of two network ports for interconnection to a network backbone:

- An IEEE 802.3 10Base5 Auxiliary Unit Interface (AUI) for attachment to coaxial (thick) Ethernet or an external transceiver
- An IEEE 802.3 10Base2 BNC port for attachment to thin Ethernet

This interconnection makes it possible for the repeater to connect to different media (thick or thinnet coaxial, fiber optic, and twisted pair), using an external transceiver.

The *AT-3012SL, AT-3016SL and AT-3024SL Multiport Repeaters* use the latest technologies, including a custom Application Specific Integrated Circuit (ASIC), and Surface Mount Technology (SMT). Using these technologies help enhance functionality, increase reliability, and improve price and performance.

The repeaters conform to the IEEE 802.3 specifications. This conformity allows for a maximum of four cascaded repeaters through one of the 10Base-T ports. It also enables a maximum of 1024 individual segments for configuration into a single network by the extended use of fan-outs (see Chapter 7 for configuration diagrams).

Major Features

The major features of the *AT-3012SL, AT-3016SL, and AT-3024SL Multiport Repeaters* are the following:

- Packet Regeneration
  - This feature regenerates the packet preamble, retimes the data packets, and extends collision fragments.
- Link Integrity
  - The IEEE 802.3 defined link integrity test function continually monitors the twisted pair cable to ensure link continuity of the receive pair between the user node and the repeater.
- Network Utilization%
  - Ranges from 1% to 80% (and greater) indicating by percent the amount of network traffic transmitted/received.
- Auto Partitioning
  - Also known as segmentation; each segment is automatically partitioned whenever 32 consecutive collisions or one long collision consisting of between 125 and 3750 Bytes are seen on the segment. One valid packet will reset the segment and re-connect it.
- Jabber Lock-up Protection
  - Jabber lock-up protects the repeater from being overrun with data packets from a possibly defective device. That is, jabber lock-up automatically prevents transmitted data from reaching the repeater if the transmitted data time exceeds a specified duration (in the range of 20 to 150 ms).

Overall Features

The repeaters have the following overall features:

- IEEE 802.3 compliant 10Base-T repeater, Ethernet Version 1.0 and 2.0 compatible
- Supports all standard Ethernet media, including fiber optic, via AUI port (external transceiver may be required) for the backbone connection (Ethernet ports are 10BaseT only.)
- AUI port to accommodate a 10Base5 or thick Ethernet connection to the network backbone through a drop cable
- BNC port to accommodate a 10Base2 or thin Ethernet connection to the network backbone through a link segment
- 12, 16 or 24 10Base-T (RJ-45) network ports, depending on model
- Standalone or department concentrator applications
- Receive and Port OK LEDs per port

- Status and diagnostic LEDs
- MDI/MDI-X switch that enables cascading of hubs without a special crossover cable (Port 1)
- Standalone or rack mountable installation
- Internal termination selection switch on BNC port

Front Panel

All connectors are located on the front panel. The front panel consists of the following components:

- Power connector
- Status LEDs (Activity, Power, Collision)
- Network Utilization% LEDs
- AUI port
- BNC port
- 10BaseT network ports (12, 16, 24)
- MDI/MDI-X switch (Port 1)
- Terminator switch (BNC port)

Figure 1, Figure 2 and Figure 3 shows the front panel of the three models.

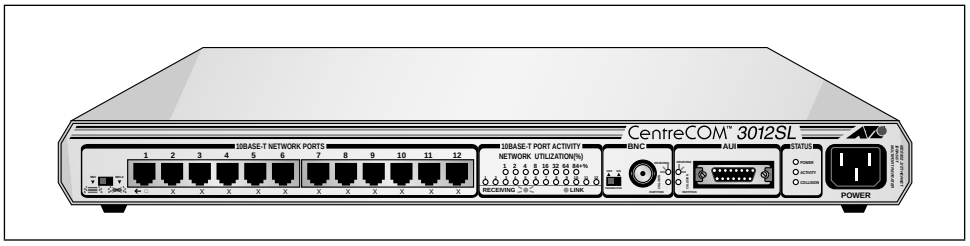

Figure 1: AT-3012SL Front Panel

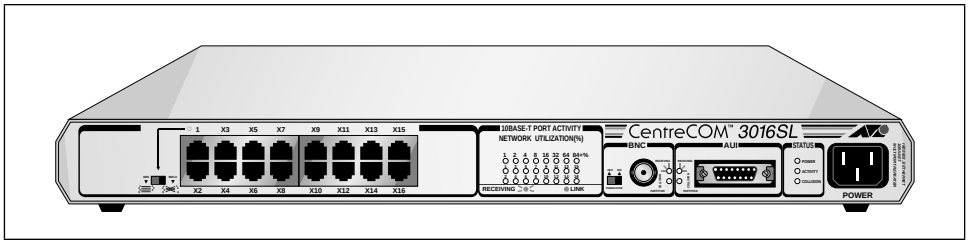

Figure 2: AT-3016SL Front Panel

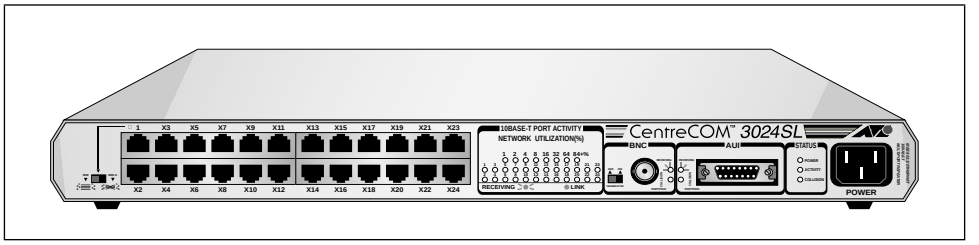

Figure 3: 3024SL Front Panel

LEDs

Table 1 lists and defines the front panel LEDs.

Table 1: AT-3012SL, 3016SL, and 3024SL LEDs

LED	Color	Description
Power (hub status)	Green	lights when power is applied
Activity (hub status)	Green	indicates the repeater is functional and is transmitting packets
Collision (hub status)	Yellow	indicates a data collision on a network port
Receive (AUI or BNC)	Green	indicates that the AUI/BNC port is receiving data
Collision	Yellow	indicates a data collision on the AUI/BNC port
Partition	Yellow	indicates on the AUI/BNC port
Network Utilization%	Green	indicates the percentage of the network that is being utilized
Link	Green	indicates a valid link

Figure 4 and Figure 5 show the hub status and network port LEDs, respectively.

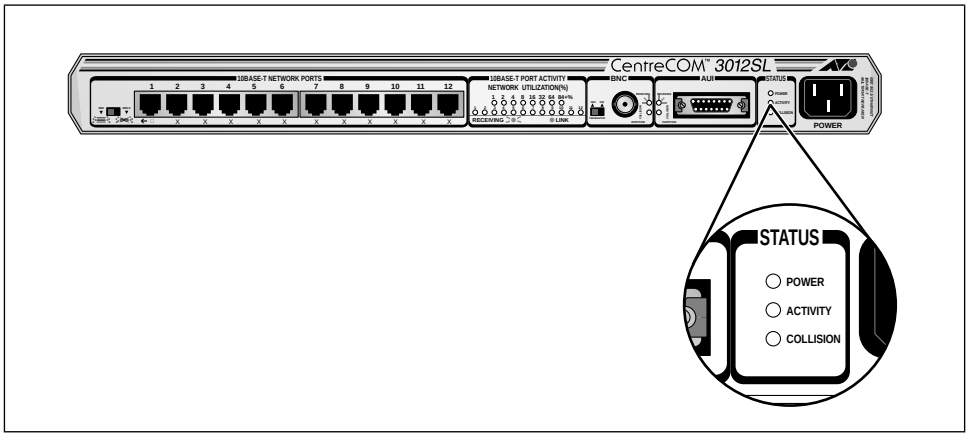

Figure 4: Repeater Status LEDs

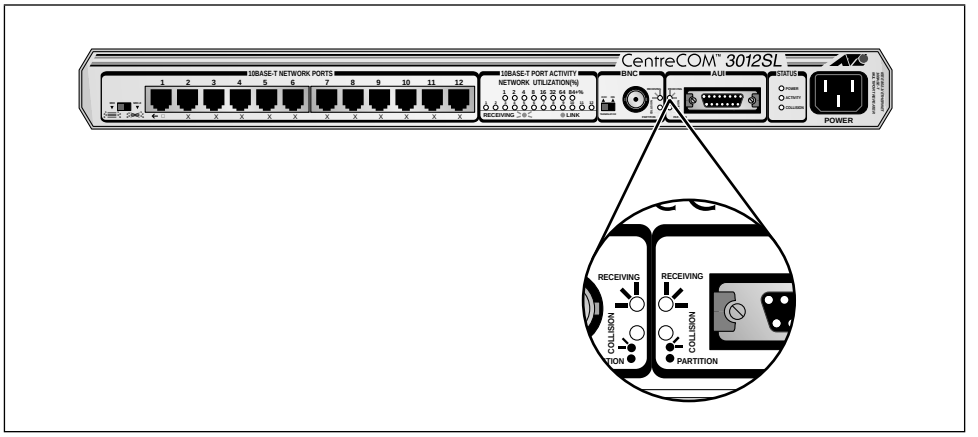

Figure 5: Network Port LEDs

Switches

Each model has two switches:

- Terminator switch that can be used to manually terminate the BNC network port (50 ohms) See Figure 6.
- MDI/MDI-X switch which is an internal signal crossover (MDI/MDI-X) on 10Base-T Port 1.

The Terminator switch enables or disables internal termination at this end of the 10Base2 segment. If installing a link segment with a BNC-T connector on this port, and if using external termination, set this switch to the OFF position to disable termination. If installing a link segment without a BNC-T connector at this port, that is, the unit is at the end of the cable, set this switch to the ON position.

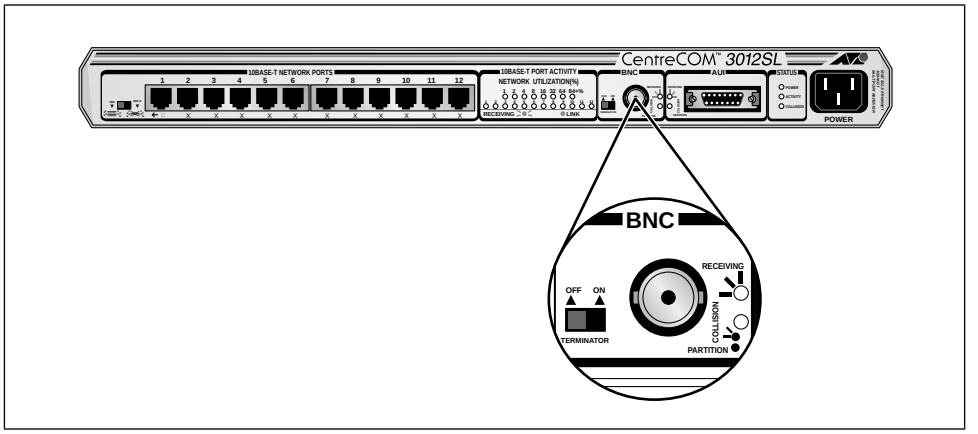

Figure 6: Terminator Switch

MDI/MDI-X Switch

The Medium Dependent Interface (MDI/MDI-X) is an internal signal crossover that allows you to use a 10BaseT port to link one hub to another, or to connect a hub to hub using the network port. This type of connection requires the signal to “crossover” so that the TX pin at one end connects to the RX pin at the other end.

The 10Base-T RJ-45 ports generally are used for network connections between the hub and Network Interface Card (NIC). This connection requires a standard straight-through cable which has a pin at one end that connects to a pin with the same number at the other end.

However, you may want to use one of the 10Base-T ports to link one hub to another. You also can connect a hub to a hub using the network backbone port. This connection requires the signal crossover so that the TX pin at one end connects to the RX pin at the other end.

When connecting two hubs via the 10Base-T port, or when when connecting two hubs via the network port, you must use the one of the following:

- a special crossover cable, available commercially at most electronic outlets
- a built-in method for internally crossing the signal over, before it is transmitted through the cable.

ATI has incorporated the latter technique into the AT-3012SL, 3016SL, 3024SL models. The MDI/MDI-X switch at the far left of the switch’s front panel converts RJ-45 Port 1 from a normal network connector into an internally crossed-over port for hub-to-hub connection:

- The default setting for the switch is MDI-X (standard RJ-45 port) (see Figure 7).
- If you want to use Port 1 to connect two hubs, you must set the switch on only one of the hubs to the MDI position.

By using the MDI/MDI-X switch, you can connect two hubs through standard straight-through cable. The switch affects Port 1 only; you can continue to use all the other 10Base-T ports for network connections through straight-through cable, no matter how you set the MDI/MDI-X switch.

If you connect a straight-through cable or any cable between two hubs or any two nodes, and the network LEDs do not indicate a link condition, change the MDI/MDI-X switch to the other setting. The repeater will not be damaged if the MDI switch is in the wrong position.

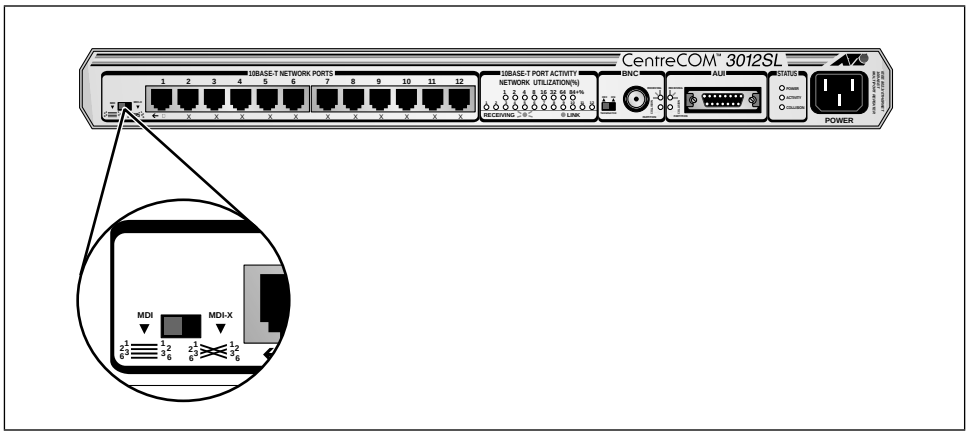

Figure 7: AT-3012SL MDI/MDI-X Switch

Chapter 2

Installation

Site Requirements

Note

Before installing the repeaters, read the electrical safety and installation requirements starting on page iii.

Ventilation

The multiport 10Base-T repeaters have vents on the sides for air circulation. Do not restrict air flow through these openings. Obstructing the passages can cause overheating and possible component damage.

Power

The repeaters have a universal power supply that will accept either 100-120 or 200-240 VAC power at 50 or 60 Hz as appropriate.

Check your facility electrical service availability before installing the repeater. Make sure that the voltage and frequency applied are of the correct ratings for your AT-3012SL, 3016SL, and 3024SL.

There is no external power switch for AT-3012SL, 3016SL, 3024SL model repeaters. Power is applied as soon as you connect the power cord. Make sure that you locate the unit near an accessible AC outlet so that you easily can disconnect the power cord.

Port Configurations

Station Ports

Each AT-301SL2, 3016SL, 3024SL repeater includes a bank of 10Base-T station port receptacles equipped with shielded RJ-45 connectors. The model number indicates the number of station ports, as shown in Table 2. The layout and numbering of the ports varies depending on the model type; refer to Chapter 3, 4 or 5 as appropriate.

Table 2: AT-3012SL, 3016SL, 3024SL Model Types

Model Number	Number of Station Ports	Specification
AT-3012SL	12	Single bank of two 1x6 units
AT-3016SL	16	Single bank of four 1x4 units
AT-3024SL	24	Double-stacked; two banks of 1x12 units

Cable Requirements

10Base-T UTP maximum cable length is 100 meters (328 ft.). The cable should be 22 to 26 AWG UTP wire with 100 Ω impedance and have Category 3-5 rating. All three models use RJ-45 modular connectors for 10Base-T connections.

Installation

To install a repeater, do the following:

1. Carefully remove the repeater from its packaging materials. Retain the packing materials until satisfactory installation has been achieved.
2. Place the repeater in a location with adequate ventilation and power receptacles.
3. Apply power to the repeater by attaching its power cable. Check that the green POWER LED on the front panel lights.
4. Attach 10Base-T UTP cables with attached RJ-45 connectors to 10Base-T station ports.
5. Test your unit's connectivity. See the "Link Testing" section that follows.
6. If you are attaching the repeater to a network backbone, connect an appropriate cable to either the AUI or BNC network port.

Link Testing

Check the LINK LED for each 10Base-T port that is being used. ON indicates a valid link. Link testing can be done by either attaching an external transceiver to the repeater or by using existing network devices.

Warning

Make sure that the repeater is not connected to an active network when performing this test.

Using an external transceiver

1. Connect an AT-210T transceiver or AT-210TS transceiver to the repeater's 15-pin AUI port.

2. Make sure that the transceiver's Signal Quality Error (SQE)/Heartbeat test function is disabled.

   When the repeater is powered on, the transceiver should also be receiving power.

3. Attach one end of a straight-through UTP cable to the transceiver's 10Base-T receptacle, and the other end to Port 1, as shown in Figure 8.

4. Make sure that the MDI/MDI-X switch is set to the MDI-X position (crossover).

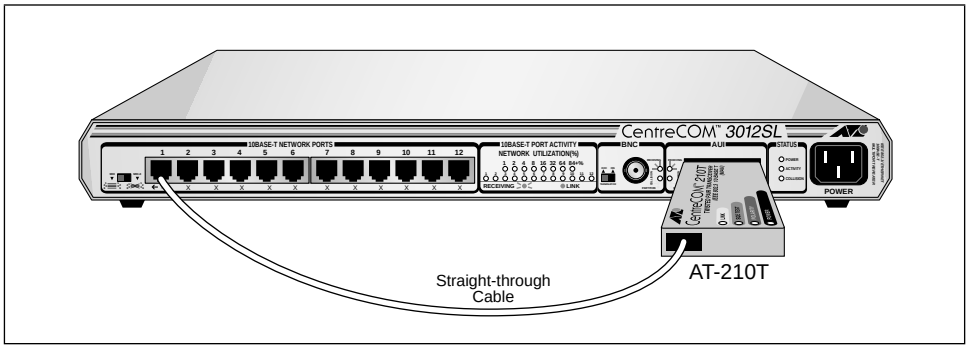

Figure 8: AT-3012SL Test Connection

5. Check for valid LED settings:

   - ❑ LINK (Port 1) should be lit on the repeater side of the connection.
   - ❑ The Link LED on the AT-210T or AT-210TS should also be lit.

6. Leaving the transceiver connection intact, connect the other end of the cable in turn to each of the other 10Base-T ports and check the LEDs.

Using existing network devices

1. Establish a network connection from Port 1 to a network device (such as a server) and from Port 2 to a workstation. Make sure both LINK LEDs are lit.

   After a successful connection, disconnect the active 10Base-T connector from Port 2 and connect it to the next successive port (i.e., Port 3). Continue until all 10Base-T ports have been validated with secure network connections.

Verifying Installation

1. Establish a connection from the device connected to Port 1 to the device connected to Port 2.
2. Once the connection between the devices that attach to 10Base-T Port 1 and Port 2 has been successfully established, remove the RJ-45 connector from Port 2 and connect it to the unit's remaining 10Base-T ports to verify functionality.
3. If all ports test successfully, install the remaining 10Base-T RJ-45 connections and make sure that the LINK LED for each port is lit. Remember, the 10Base-T device on the opposite end of the UTP cable must be operational.

   The LINK LED validates the receive pair only. The opposite end of the UTP segment is responsible for validating the transmit pair.

Chapter 3

Troubleshooting

10Base-T Cabling

If the Power LED is not lit

- ❑ Check your power connections.

If the LINK LED is not lit

1. Check that the device at the opposite end of the UTP link is powered on, and make sure the cable is properly connected.

2. Check that the proper cable pinout is used. If another manufacturer's 10Base-T device is used at the opposite end of the UTP link, make sure that it is true 10Base-T.

   If only one segment is non-functional, try another port to determine if the port or cable segment is at fault.

Note

UTP cable wiring is the most common cause of non-functional segments during installation. Use only UTP cable Category 3 or above designed for use in 10Base-T applications. 10Base-T wiring lengths should not exceed 100 meters (328 ft.). The wiring should be routed away from devices known to emit electromagnetic interference, such as fluorescent lights, power transformers, and relay equipment.

Collision LED

If the Collision LED is flashing excessively, make certain that the SQE/ Heartbeat Test function is disabled on the transceiver attached to the AUI port. Do not enable the SQE/Heartbeat Test on the repeaters.

Excessive flickering of the Collision LED may indicate excessive frame collisions on the segment. This may be caused by an overloaded segment or faulty cable or connection.

If no ports are functional, and the Power LED is illuminated, try a known good repeater to test and validate the segment.

Chapter 4

Configurations

The illustrations in this chapter provide some examples of possible network configurations using CentreCOM AT-3012SL, 3016SL, 3024SL Multiport Repeaters. These examples are not meant to be exhaustive and may or may not fit your network's requirements. For consistency, the examples show AT-3012SL units, but any combination of the three models may be used interchangeably.

Figure 9 illustrates connecting an AT-3012SL to a thick Ethernet backbone supporting 12 10Base-T Ethernet segments.

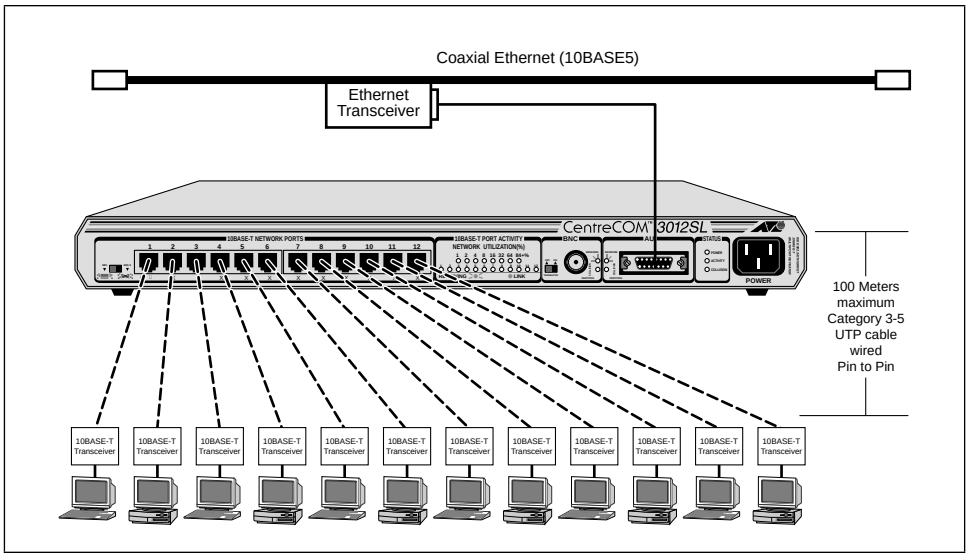
Coaxial Ethernet (10BASE5)
Ethernet Transceiver
CentreCOM 3012SL
100 Meters maximum Category 3-5 UTP cable wired Pin to Pin
10BASE-T Transceiver

Figure 9: Typical Hub Configuration

Cascade

Cascading of the AT-3012SL, 3016SL, 3024SL Multiport Repeater also is possible following the IEEE 802.3 four repeater rule, as shown in Figure 10. Figure 10 shows the maximum extent to which you can cascade these repeaters.

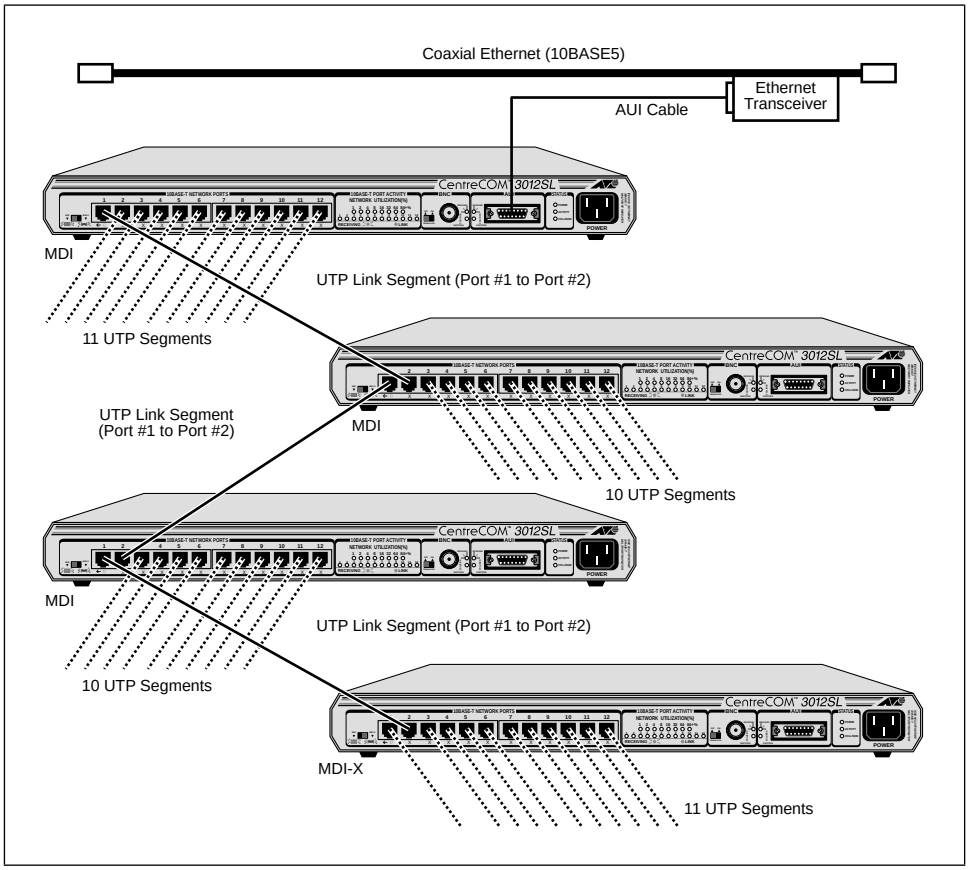

Figure 10: Cascading Hubs

Another way of achieving the same result is to use a dual-port AUI transceiver and a two-level cascade, as shown in Figure 11. You also can connect each repeater separately to the backbone, using a four-port AUI transceiver in place of the dual-port one.

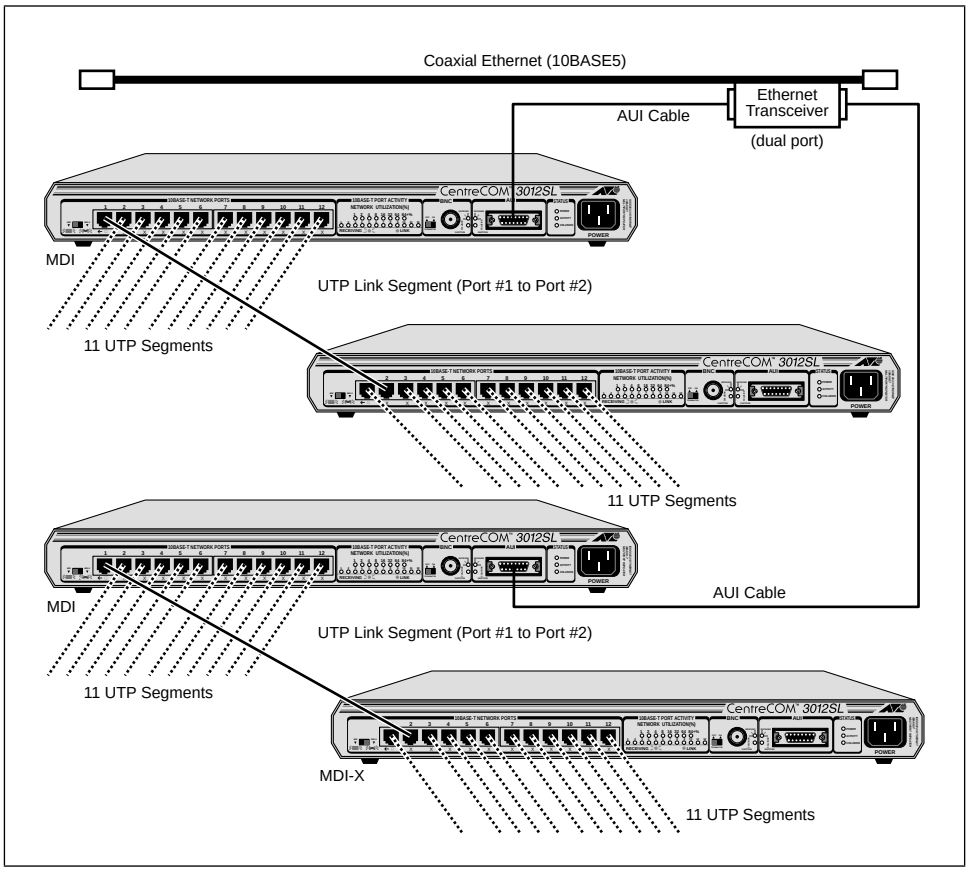

Figure 11: Two-Level Cascade

BNC Bus

Bussing of the AT-3012SL, 3016SL, 3024SL multiport repeater is another possibility. You can accommodate more nodes on your network if you connect the repeaters through the BNC network port. Note that the worst case, node to node, is through only two repeaters; one provides the UTP station linkage to thinnet, and the second repeater connects thinnet through the BNC bus to the AUI cable. On 10Base2 thin Ethernet, a maximum of 30 hubs can be connected, as shown in Figure 12.

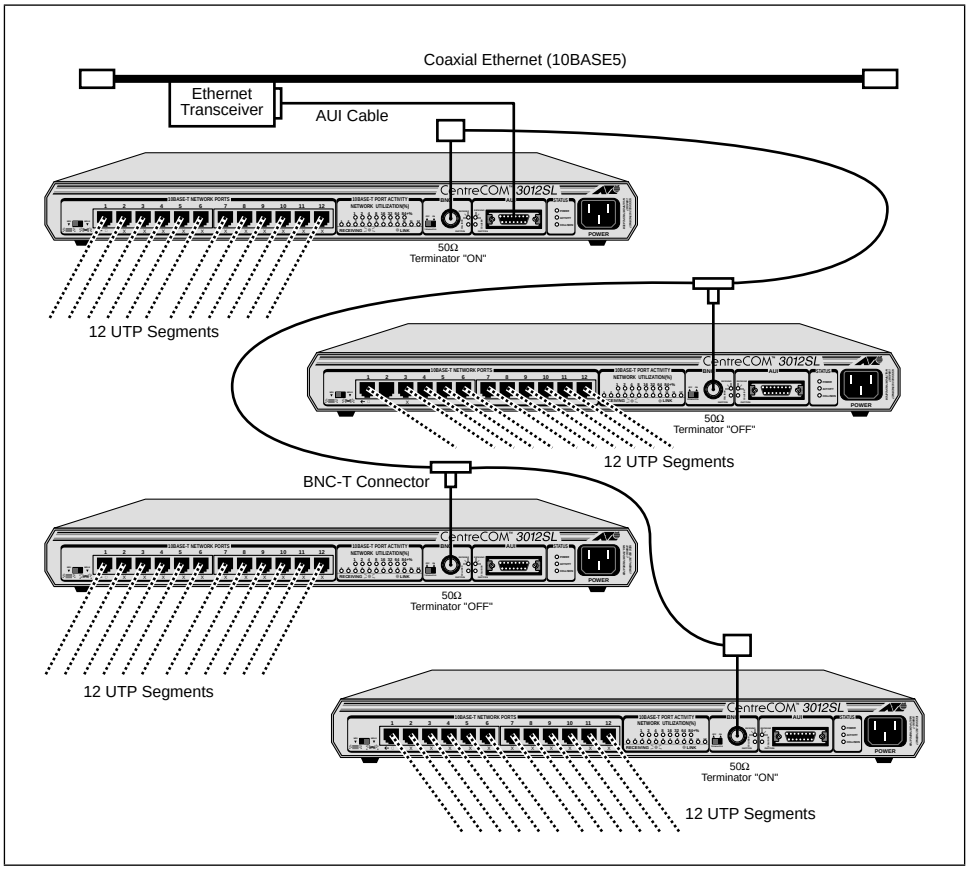

Figure 12: Hubs on a Backbone Using BNC Network Port

Appendix A

Data Cabling Connections

The following sections detail cabling connections and port specifications for IEEE 802.3 media. For comprehensive treatment of these topics, refer to the original IEEE specification.

10Base-T

UTP (RJ-45) links support maximum transmission length of 100 meters (328 ft.) at 10 Megabit per second data rates.

A serious problem exists concerning identification of modular cable. There are various grades of voice-quality and data-quality cables available. These can appear to be similar externally, although their high-speed data transmission characteristics are radically different.

If any voice-quality cabling is used in a 10Base-T network system, data movement is slow, collision-prone or non-existent. In addition, the Link LED on the interface usually indicates a valid link in such a case.

Therefore, you are required to use only Category 3, 4 or 5 cabling with 10Base-T connections. In general, if a cable type is flat, it is usually untwisted, and causes problems. If a cable is round in section, it typically works.

UTP Hub-to-MAU Wiring

All three repeaters have 10Base-T UTP ports with industry-standard RJ-45 connectors. The standard network connection is from a Data Communications Equipment (DCE) device, such as the repeater, to a Data Terminal Equipment (DTE) device, such as a workstation Network Interface Controller (NIC). This configuration uses a straight-through cable, as shown in Figure 13.

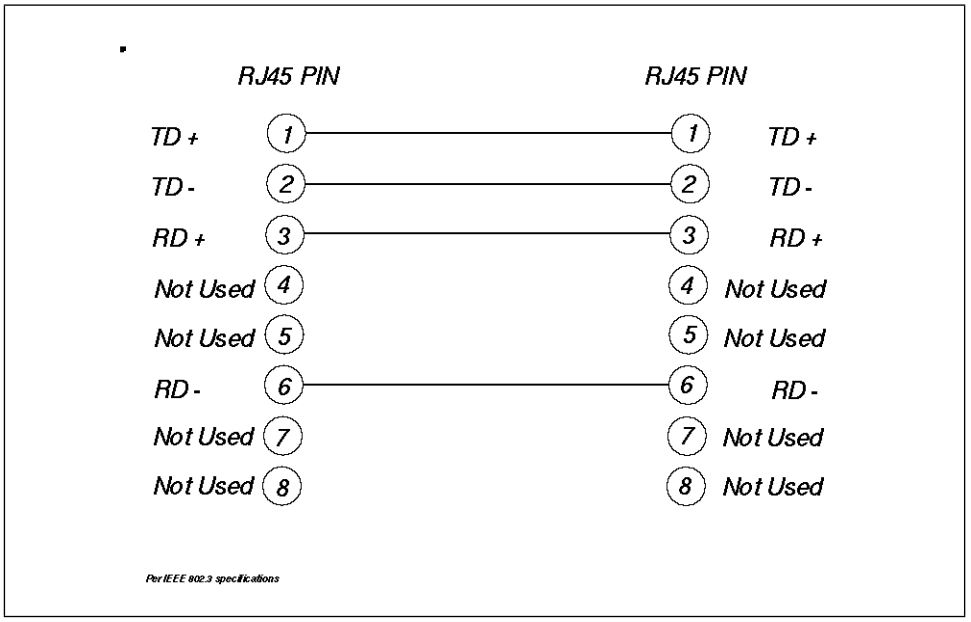

Figure 13: 10Base-T UTP Cabling Hub-to-MAU or NIC (Straight-Through)

Figure 14 shows a UTP cable with an RJ-45 connector. For a 10Base-T link between a hub and a Media Access Unit (MAU) or NIC, the cable is wired straight-through. That is, an RJ-45 connector at the hub would wire pin-to-pin to the RJ-45 connector at the MAU.

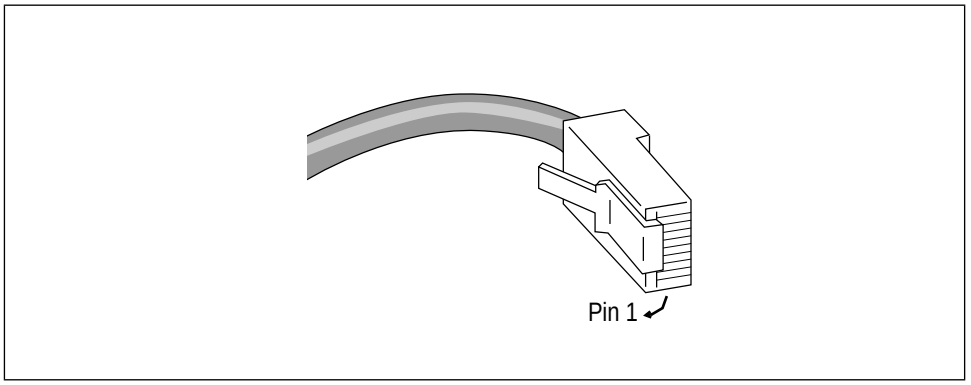

Figure 14: RJ45 Cable

UTP MAU-to-MAU, Hub-to-Hub Wiring

10Base-T MAU-to-MAU or hub-to-hub wiring generally requires a crossover cable located somewhere along the UTP cable run. This may commonly occur at the punch-down block or between the RJ-45 wall connector and the workstation. See Figure 15.

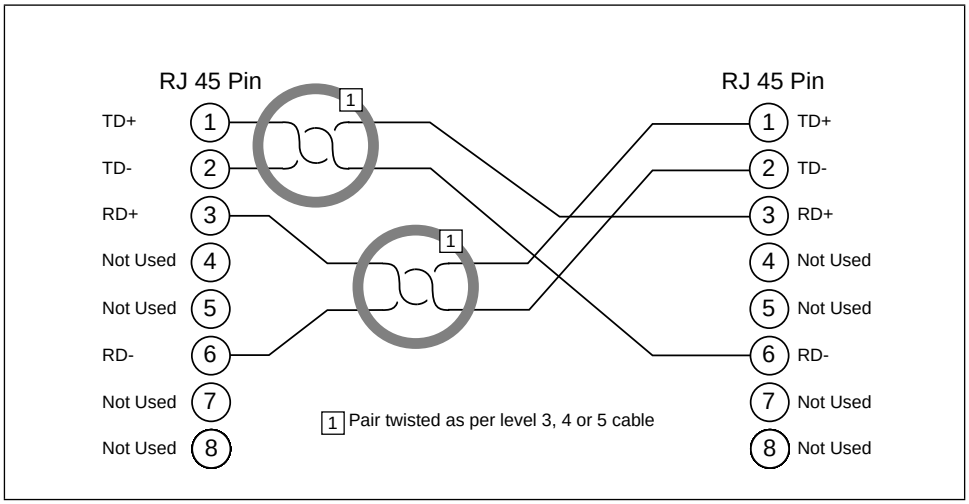

Figure 15: Hub-to-Hub or MAU-to-MAU Wiring

MDI/MDI-X Switch

The MDI/MDI-X pin-out switch affects the RJ-45 Port 1. The RJ-45 pin-out straight-through (MDI)/crossover (MDI-X) switch enables you to use a straight-through cable (Figure 14) during hub-to-hub connectivity by simply placing the switch in the MDI position. This eliminates the need for making or obtaining a crossover cable.

The interface type that IEEE specifies as a standard for these repeaters is the MDI-X switch. The straight-through/crossover switch merely provides convenience in having to obtain an alternate cable in some applications. If you connect a cable and it does not work, try changing the MDI switch. The rule of thumb is the total number of crossovers must be odd. You cannot harm the repeater by having the MDI switch in the wrong position.

Table 3 shows the required positions for the straight-through/crossover selection switch dependent on the configuration. Table 3 assumes a straight-through cable is being used for all three models. The switch setting are the opposite of what is shown if a crossover cable is being used.

Table 3: MDI and MDI-X Switch Settings for Common Connection

Connected to	MDI	MDI-X
Hub	X	
RJ-45 Transceiver		X
NIC		X

In both the crossover and straight-through instances, the wire is twisted pair. Figure 16 demonstrates usable and unusable cable configurations for the straight-through wire pairing in the UTP environment.

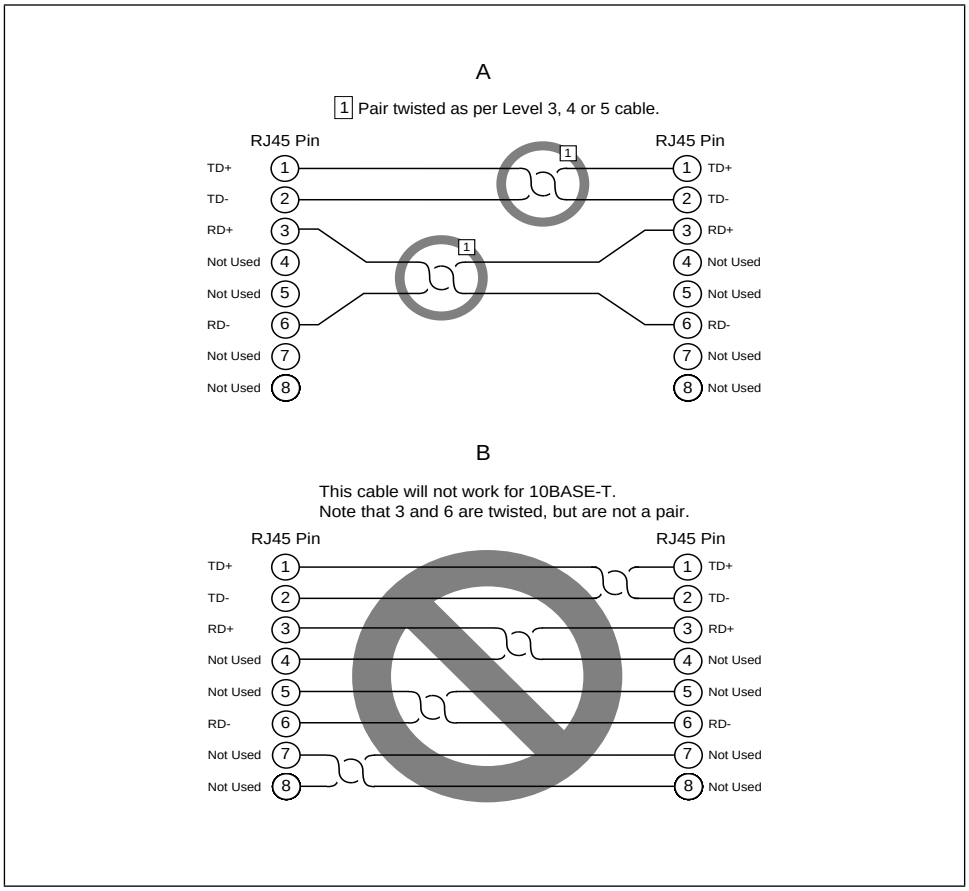

Figure 16: Hub-to-MAU Wiring (A) Usable and (B) Unusable

Diagram A of Figure 16 is correct because the proper pairs are twisted together. Diagram B is incorrect because the wires for the receive pair, pins 3 and 6, are not twisted together. This could result in excessive common mode noise and an unacceptably high data error rate.

If you pair pins incorrectly, as shown in Figure 16, Diagram B, your network may have a high data error rate. In a straight-through cable, the transmit pins, 1 and 2, are paired, as are the receive pins, 3 and 6. In a crossover cable (Figure 16), pins 1 and 2, TD+ and TD-, are paired, as are pins 3 and 6, RD+ and RD-. When pins 1 and 2 are crossed over, they connect to pins 3 and 6 respectively, and pins 3 and 6, when crossed over, connect to pins 1 and 2 respectively.

10Base5 (Thick) Ethernet

When configuring 10Base5 coax segments, IEEE 802.3 specifications allow 100 MAU attachments or less, spaced at multiples of 2.5 meters (8.2 ft.) measured accurately from the cable end (50 Ω terminator included). The 10Base5 cable segment cannot exceed 500 meters (1,640 ft.). Worst case "end-to-end" propagation delay of a 10Base5 coax segment is 2165 ns.

Propagation delay of 10Base5 Ethernet coax is calculated at 4.33 ns/meter. Both ends of the segment must be terminated with a 50 Ω termination with a power rating of 0.5 watts or greater. Earth grounding of the segment shield must take place at one and only one point on the cable.

AUI Cables

AUI (Drop) cables cannot exceed 50 meters (164 ft.) each. Attachments can be made only to the cable ends at the 15-pin D-shell connector. AUI cables can have a maximum 257 ns propagation delay, as used for computing the worst case propagation delay of a cable system. AUI cable propagation delay is approximately 5.13 ns/meter.

This cable internally consists of four shielded twisted pair wires with an overall shield and drain wire; a 15-pin D-shell male connector at one end and a 15-pin D-shell female connector at the other end. Cable impedance is nominally 78 Ω. The AUI cable typically connects a transceiver attached to a coaxial segment to a DTE (workstation).

10Base2 (Thin) Ethernet

When configuring thin coax segments, IEEE 802.3 specifications allow 29 or fewer MAUs per cable segment spaced at a minimum of 0.5 meters (1.64 ft.). The 10Base2 cable length cannot exceed 185 meters (607 ft.) per 10Base2 cable segment.

The worst case propagation delay for a 185 meters (607 ft.) thin Ethernet segment is 950.9 ns. The propagation delay for 10Base2 Ethernet cable is 5.14 ns/meter. Both ends of the segment must be terminated with a 50 Ω termination with a power rating of 0.5 watts or greater. Earth grounding of the segment shield can occur at one and only one point on the cable.

Appendix B
Glossary

10Base2—Also called thin Ethernet, thinnet or CheaperNet, a 10 MHz baseband specification. Cable impedance is 50 Ω and maximum coaxial segment length is 185 meters (607 ft.).

10Base5—Also called thick Ethernet, a 10 MHz baseband specification. Cable impedance is 50 Ω and maximum coaxial segment is 500 meters (1,640 ft.). The cable is commonly referred to as yellow cable. Thick Ethernet cable is typically used as a trunk or backbone path of the network.

10Base-T—IEEE 802.3 UTP Ethernet. Low-cost Level 3 or better UTP wiring affords 100 meters (328 ft.) of point-to-point link segments. UTP uses RJ-45 connectors and sometimes 50-pin Telco connectors to a patch panel and runs at 10 MHz.

ATTACHMENT UNIT INTERFACE (AUI)—Connection between a MAU (transceiver) and a DTE (typically a workstation). Includes a 15-pin D-sub connector and sometimes a 15-conductor twisted pair cable. Maximum length is 50 meters (164 ft.).

BASEBAND COAXIAL SYSTEM—A system whereby information is directly encoded and impressed on the coaxial transmission medium. At any point on the medium, only one information signal at a time can be present without disruption.

BAYONET NUT COUPLE (BNC) CONNECTOR—A 10Base2 thin coax connector with push-on BNC locking lug that quickly locks into place with a half twist.

BIT RATE (BR)—The rate of data throughput on the medium in bits per second. Ethernet specifies 10 million bits per second.

BIT TIME—The duration of one bit symbol (1/BR). Ethernet specifies a bit time of 100 ns.

CARRIER SENSE—In a LAN, an ongoing activity of a data station to detect whether another station is transmitting.

CARRIER SENSE MULTIPLE ACCESS with COLLISION DETECT (CSMA/CD)—This is the access method employed by IEEE 802.3 LAN transceivers, by which multiple stations compete for use of the transmission medium (coax cable) for data packet transmission. It provides for a level of error detection should that transmission be corrupted or impeded by contention for the transmission medium.

COAX SEGMENT—A segment of Ethernet cable that contains MAUs.

COAXIAL CABLE—A two-conductor (center conductor, shield system), concentric, constant impedance transmission line used as the trunk medium in the baseband system.

COAXIAL CABLE SEGMENT—A length of coaxial cable sections and coaxial connectors, terminated at each end in its characteristic impedance.

COLLISION—An unwanted condition that results from concurrent transmissions on the physical medium.

COMPATIBILITY INTERFACE—The MDI coaxial cable interface and the AUI branch cable interface, the two points at which hardware compatibility is defined to allow connection of independently designed and manufactured components to the baseband transmission system.

CROSSOVER—Wiring used when connecting a 10Base-T MAU to another 10Base-T MAU or a 10Base-T hub to another 10Base-T hub. For example, one 10Base-T MAU has the TD pair on the same pins as another 10Base-T MAU. If pins were wired straight, there would be two transmitters on one pair and no receiver. As a solution, the crossover cable crosses the TD pair with the RD pair, to connect the TD pins on one end to the RD pins at the other end.

D-SUB CONNECTOR—The AUI cable uses 15-pin D-sub connectors. “D” refers to the shape of the connector shell. Also called miniature D, DB15, or DIX connectors.

DATA COMMUNICATION EQUIPMENT (DCE)—In RS-232 specification, a module, such as a modem, for connecting a DTE to other equipment. A repeater connected to a terminal or workstation for Omega management use is wired as a DCE.

DATA TERMINAL EQUIPMENT (DTE)—In RS-232 specification, a module typically at the end of a segment (i.e., uninterrupted length of Ethernet cable). The DTE could be an Ethernet workstation, repeater or bridge.

DIX CONNECTOR—See D-Sub Connector

HEARTBEAT—See SQE

HOUSE WIRING—House wiring is the existing wiring inside a building. This wiring generally originates from one or more wiring closets, such as a telephone room. Some older buildings may have wiring unsuitable for 10 megabit data rates. In these circumstances, it is recommended that the wiring be tested with a 10Base-T signal/wire tester.

HUB/REPEATER—A hub is a central signal distributor. It is used in a wiring topology consisting of several point-to-point segments originating from a central point. The term hub is often used interchangeably with the term repeater. Multiport 10Base-T, 10Base2 and fiber optic (10Base-FL, FOIRL) repeaters are considered hubs. See Repeater.

HUB-to-HUB WIRING—See MAU-to-MAU Wiring

HUB-to-MAU WIRING—UTP cables for 10Base-T hub-to-MAU or NIC cards are wired straight-through. An RJ-45 receptacle at the hub would wire pin-to-pin to the RJ-45 receptacle at the MAU.

IMPEDANCE—An electrical characteristic of a circuit dealing with the combination of the AC and DC resistance and the appearance of that resistance to attached circuits.

JABBER LOCK-UP—The MAU's ability to automatically inhibit the transmit data from reaching the medium if the transmit data time exceeds a specified duration. This duration is in the range of 20 ms to 150 ms. Jabber lock-up protects the medium from being overrun with data packets from a possibly defective device.

JAM—This is a term used to describe the collision reinforcement signal output by the repeater to all ports. The jam signal consists of 96 bits of alternating 1s and 0s. The purpose is to extend a collision sufficiently so that all devices cease transmitting.

JITTER—The shift of the data bit in respect to a standard clock cycle. Jitter is undesirable and must be minimized.

LINK SEGMENT—The link segment of coaxial cable is a segment that has no MAU devices, but links together two LAN devices such as repeaters.

LINK TEST—In 10Base-T Ethernet there is a link test function that validates the UTP link. This consists of a pulse transmitted from point A on one pair that is validated at point B. Point B also transmits a pulse on the second pair to be validated by point A. These pulses occur during media idle states (in between packets).

MAU—See Medium Attachment Unit

MAU-to-MAU, HUB-to-HUB WIRING—10Base-T MAU-to-MAU or hub-to-hub wiring generally requires a cross-over cable located somewhere along the UTP cable run. This may commonly occur at the punch-down block or between the RJ-45 wall receptacle and the workstation.

MAU/TRANSCEIVER—An Ethernet transceiver is a MAU. A 10Base-T MAU interfaces the UTP media to an AUI port on a workstation, repeater, bridge or other Ethernet device.

MDI/MDI-X—See Medium Dependent Interface

MEDIUM ATTACHMENT UNIT (MAU)—In a LAN, a device used in a data station to couple the DTE to the transmission medium.

MEDIUM DEPENDENT INTERFACE (MDI)—The mechanical and electrical interface between a hub and a transceiver (MAU). MDI-X is another version of the interface that enables hubs to connect using different pin-outs, thereby avoiding conflicts that occur when receiving and transmitting packets use the same pin-out.

N-SERIES—A barrel shaped, threaded connector used on 10Base5 (thick Ethernet) coaxial cable.

PATCH PANEL—A 10Base-T patch panel may be used between a punch-down block and UTP workstation. The patch panel generally has a female RJ-45 connector on the front for each workstation and a Telco (RJ21) connector on the back, which is wired to a punch-down block. This provides a convenient way for the installer or network manager to connect the hub 10Base-T ports into the desired building locations.

POLARITY CORRECTION—Many 10Base-T UTP ports have a polarity correction function. If the UTP wiring has RD- and RD+ inadvertently crossed, the polarity correction function will sample the signal and electrically swap the wires. If the TD- and TD+ wires are crossed, the correction would occur at the MAU on the other end of the UTP link. This occurs within a single pair and should not be confused with the crossover cable.

PROPAGATION DELAY—The time it takes a signal to travel from the input of a system component to the output. Usually measured in nanoseconds. IEEE 802.3 has specific propagation delay maxima for computing propagation budgets when designing a LAN. Cable length plays a major role in propagation delay; for example, a 50-meter (164-foot) AUI cable has a maximum allowable propagation delay of 257 ns. The propagation delay of cable depends on the length and velocity factor of the cable type. There are also propagation delays associated with electronics attached to the system.

PUNCH-DOWN BLOCK—The punch-down block is the wiring panel where the house wiring from the building's offices terminates. This is where many 10Base-T hubs would be located. Wiring installers use a special punch-down tool to insert the UTP wire for data and voice applications.

REPEATER—A device used to extend the length, topology, or interconnectivity of the physical medium beyond that imposed by a single segment, up to the maximum allowable end-to-end trunk transmission line length. Repeaters perform the basic actions of restoring signal amplitude, waveform and timing applied to normal data and collision signals.

RJ-45—This connector is a 10Base-T standard for connecting UTP cabling. It is inexpensive and easy to install onto UTP cable.

SIGNAL QUALITY ERROR (SQE)—Also referred to as Collision or Collision Presence. This occurs when two devices attempt to transmit at the same time, which is an illegal condition. All ATI transceivers test for SQE.

SQE TEST—Commonly referred to as Heartbeat, is a special 802.3 signal sent by the MAU to the DTE to test the collision detection function. Some DTE want SQE and others do not. Repeaters do not want the SQE Test.

STRAIGHT-THROUGH—A type of wiring connection where the pins of one connector connect to the same pins of another connector. For example, pin 1 of one connector connects to pin 1 of another connector.

THICK ETHERNET—See 10Base5

THIN ETHERNET—See 10Base2

TRUNK CABLE—The coaxial cable used to distribute signals over long distances throughout a cable system.

UNSHIELDED TWISTED PAIR (UTP)—A cable used in 10Base-T wiring that consists of at least two twisted pairs of 22 to 26 AWG wire. The pairs should have at least 3 twists per foot and have an impedance of 100 Ω. Level 3, Level 4 and Level 5 UTP cables fit these criteria.

Appendix C

Technical Support Fax Order

Name _____

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City _____ **State/Province** _____ **Zip/PostalCode** _____

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Incident Summary

Model number of Allied Telesyn product I am using _____

Firmware release number of Allied Telesyn product _____

Other network software products I am using (e.g., network managers)

_____

Brief summary of problem _____

_____

Conditions (List the steps that led up to the problem.) _____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

Detailed description (Please use separate sheet)

Please also fax printouts of relevant files such as batch files and configuration files. When completed, fax this sheet to the appropriate ATI office. Fax numbers can be found on page 33.

Appendix D

CentreCOM AT-30xxSL Installation Guide Feedback

Please tell us what additional information you would like to see discussed in the guide. If there are topics you would like information on that were not covered in the guide, please photocopy this page, answer the questions and fax or mail this form back to Allied Telesyn. The mailing address and fax number are at the bottom of the page. Your comments are valuable when we plan future revisions of the guide.

On a scale of 1 to 10 (10 being most important), rate the importance of the following topics in this guide:

Hardware Installation	_____	Diagnostics	_____
Troubleshooting	_____	Configurations	_____
Data Cabling Techniques	_____	Reading the LEDs	_____

I found the following the most valuable _____

_____

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_____

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Appendix E

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